BEFORE

THE PUBLIC SERVICE COMMISSION OF

SOUTH CAROLINA

DOCKET NO. 92-005-E - ORDER NO. 92-405

MAY 29, 1992

IN RE: Adjustment of Base Rates for Fuel Costs for Duke Power Company	)	ORDER APPROVING BASE RATES FOR FUEL COSTS

On May 19, 1992, the Public Service Commission of South Carolina (the Commission) held a public hearing on the issue of the recovery of the costs of fuel used in electric generation by Duke Power Company (the Company) to provide service to its South Carolina retail electric customers. The procedure followed by the Commission is set forth in S.C. Code Ann., §58-27-865 (Cum. Supp. 1991). The review in this case is from December, 1991 through May, 1992.

At the public hearing, William F. Austin, Esquire, and Karol P. Mack, Esquire, represented the Company; Nancy Vaughn Coombs, Esquire, represented the Intervenor, the Consumer Advocate of South Carolina; and Marsha A. Ward, General Counsel, represented the Commission Staff. The record before the Commission consists of the testimony of two witnesses on behalf of the Company, three witnesses on behalf of the Commission Staff, and four hearing exhibits.

Based upon the evidence of the record, the Commission makes the following findings of fact and conclusions of law:

FINDINGS OF FACT

1. The record of this proceeding indicates that for the period from October 1991 through March 1992 the Company's actual total fuel costs for its electric operations amounted to $355,257,178. Hearing Exhibit No. 4, Accounting Exhibit E.

2. Staff reviewed and compiled a percentage generation mix statistic sheet for the Company's fossil, nuclear and hydraulic plants for October 1991 through March 1992. The fossil generation ranged from a high of 50% in February to a low of 25% in March. The nuclear generation ranged from a high of 72% in March to a low of 48% in February. The percentage of generation by hydro ranged from 0% to 3% for this period. Hearing Exhibit No. 4; Electric Department Exhibit No. 3.

3. During the October 1991 through March 1992 period, coal suppliers delivered 6,007,916 tons of coal at a weighted average received cost per ton of $43.25. The Commission Staff's audit of the Company's actual fuel procurement activities demonstrated that the average monthly received cost of contract coal varied from $45.31 per ton in February to $49.89 per ton in January. Hearing Exhibit No. 4, Accounting Exhibit A.

4. According to Company witness William R. Stimart, the performance of the Company's nuclear units equals or exceeds that of comparable facilities as demonstrated thusly:

Duke system actual capacity factors -

October 1991-March 1992	69%	4 units refueled
April 1991-September 1991	82%	2 units refueled
12 months ended March 1992	76%	
Calendar 1991	80%	

National average capacity factors -

NERC data for PWR's	
Calendar 1990	68%
5 year 1986-1990	66%

5. Staff collected and reviewed certain generation statistics of major Company plants for the six months ending March 31, 1992. Hearing Exhibit No. 4, Electric Department Exhibit 4. The nuclear fueled Oconee Plant was lowest at 0.51 cents per kilowatt-hour. The highest amount of generation was 8,795,012 megawatt-hours produced at the same Oconee station.

6. According to Staff witnesses A.R. Watts and Gary E. Walsh, Duke's equivalent availability of its base load fossil units exceeded 99% for a majority of the months of September through March; its nuclear units achieved a 76% capacity factor for the twelve months ending March, 1992 compared to the North American Electric Reliability Council's (NERC) average of 68% for the year 1990 for Pressurized Water Reactor Units; and approximately 48%-72% of the Company's electric generation was produced by Duke's nuclear units which represent approximately 35% of the Company's installed plant capacity.

7. The Commission Staff conducted an extensive review and audit of the Company's fuel purchasing practices and procedures for

the subject period. The Staff's accounting witness, I. Curtis Price, testified that the Company's fuel costs were supported by the Company's books and records. Testimony of Price; Hearing Exhibit No. 4, Accounting Department Exhibits.

8. The Commission recognizes that the approval of the currently effective methodology for recognition of the Company's fuel costs requires the use of anticipated or projected costs of fuel. The Commission further recognizes the fact inherent in the utilization of a projected average fuel cost for the establishment of the fuel component in the Company's base rates that variations between the actual costs of fuel and projected costs of fuel would occur during the period and would likely exist at the conclusion of the period. Section 58-27-865, supra, establishes a procedure whereby the difference between the base rate fuel charges and the actual fuel costs would be accounted for by booking through deferred fuel expenses with a corresponding debit or credit.

9. The record of this proceeding indicates that the comparison of the Company's fuel revenues and expenses for the period October 1991 through March 1992 produces an over-recovery of $18,063,000 through March 1992. Price testimony, p. 3.

10. The Company's projected average fuel expense for the June 1992 through November 1992 period is 1.2071 cents per KWH. However, when adjusted by the cumulative variance of fuel cost recovery, the adjusted fuel costs are 1.0255 cents per KWH. Stimart testimony, p. 11.

11. Company witness Stimart proposed that the fuel component

in base rates of 1.00 cent/KWH be continued effective June, 1992. Stimart testimony, p. 11.

12. Staff witness Watts testified that using the currently projected sales and fuel cost figures through November 1992, and a projected cumulative over-recovery of $17,512,186 through May, 1992, the average projected fuel expense is approximately 1.0209¢/KWH for the six months ending November, 1992. The currently approved base fuel factor is 1.0000¢/KWH. If the base fuel component is set at 0.950¢/KWH for this period, it will produce an estimated under-recovery of $6,834,494. Testimony of Watts, p. 6; Hearing Exhibit No. 4, Electric Department Exhibit 10.

13. Staff proposed this fuel factor of 0.950¢/KWH so that fluctuations in the fuel factor will be limited over the long term. This recommendation will further maintain rate stability and maintain a relative balance between actual and projected fuel costs and sales.

14. During the period under review,[1] Oconee Unit 2, McGuire Unit 1, McGuire Unit 2 and Catawba Unit 2 were down for refueling during some portion of the time. Other scheduled and/or forced outages occurred during this time frame at these and the Company's other nuclear units. All outages were reviewed by Staff (Hearing Exhibit No. 4, Electric Department Exhibit 2A) and a determination

1. Included in this review is an outage at Oconee Unit No. 1 which commenced in August 1991 during the Company's last fuel review period in Docket No. 91-006-E. The Commission ruled in Order No. 91-1077 that the August Oconee outage would be reviewed and ruled upon in Duke's next fuel proceeding.

was made by Staff as to the prudence of the outages. In total, three outages experienced by the Company were determined by the Staff to be the result of unreasonable actions by the Company. However, because of the Company's overall plant performance during the period, the Staff did not recommend that the resulting excess fuel replacement costs be disallowed.

THE OCONEE OUTAGES

15. Staff witness Watts stated that the Staff believes that Duke Power Company failed to take reasonable steps in the case of the Oconee Unit No. 3, Outages No. 3 and 4 commencing on January 14 and February 27, 1992, and lasting 16 and 13.6 hours, respectively. According to witness Watts, both outages resulted directly from personnel errors. Outage No. 3 was caused by inappropriate action when Instrument and Electrical (I&E) technicians performing trouble checks in the integrated control system feedwater control circuits placed test instrument leads in the current jacks instead of the voltage jacks. This created a jumper configuration leading to a false signal into the controller. This unreasonable action lead to excess fuel expenses of $33,114 on a South Carolina retail basis. Mr. Watts also testified that Outage No. 4 resulted when I&E technicians inappropriately jumpered contacts in the stator cooling panel located in the turbine building basement for Unit No. 3 instead of Unit No. 2. Unit No. 2 was down for refueling and this misidentification of unit components violates established work practices and policies and resulted in excess fuel expenses of $27,983 on a South Carolina retail basis. The excess fuel expenses

were calculated by taking the difference between average coal costs and the nuclear unit fuel cost for the month; times the down time hours; times Duke Power's ownership capacity; times a projected 85% capacity factor; and multiplied by the latest approved South Carolina retail allocation factor for KWH sales of .280244. Testimony of Watts, pp. 3-5, Hearing Exhibit No. 3.

MCGUIRE UNIT 1

16. Commission Staff witness Walsh testified to the outage at McGuire Unit No. 1. On September 20, 1991, McGuire Unit No. 1 was removed from service for refueling. This refueling outage was scheduled for 78 days. The actual duration of the outage was 81½ days, or 3½ days in excess of the scheduled duration. Staff concluded that an event which occurred on October 8, 1991 directly impacted the Company's inability to meet the scheduled return-to-service date.

On October 8, 1991, the Company removed the reactor vessel's lower internals in conjunction with a ten year in service inspection (ISI). Difficulties were encountered by the Company personnel in attaching the elevation gauge due to an inability to remove a seal surface protective ring. It was decided that the protective ring should remain in place and the elevation gauge was installed at the correct location but not at the correct elevation. While the lower internals were being lifted, the radiation monitor on the refueling crane alarmed, activating the containment evacuation alarm. The radiation monitor had not been disabled as required and the unanticipated activation of the alarm system had

an adverse effect on the quality of communications between the crane operator and the personnel in the video control station.

Because of the danger to exposure to nuclear radiation, the video control station was being utilized by technical support personnel during the lift of the lower internals. Two of the five monitors were being utilized for the lift and horizontal move of the lower internals. It appeared to the technical support person that the lower internals had cleared the vessel flange. He then instructed the crane operator to move the lower internals horizontally to remove it from the vessel area. As the crane operator began the horizontal move, the lower internals were bumped against the vessel wall. The lower internals were then lifted to a greater height and again bumped against the vessel wall. On the third lift, the lower internals cleared the vessel flange.

Additional problems were encountered as the crane operator lowered the internals into the refueling canal. The protective ring and the lifting rig guide contacted the refueling canal liner plate. Witness Walsh testified that this event was the causal factor in exceeding the scheduled refueling by 3½ days which lead to excess fuel expenses of $228,390 on a South Carolina retail basis.

Mr. Walsh testified that the less than adequate communications and a failure to follow procedures were evident in the described event. The communication problems were encountered between Duke employees and technical support personnel concerning the removal of the seal surface protective ring from the lift rig. The personnel

did not have a clear understanding of the risk associated with performing the lift with the protective ring installed. Additional communication problems occurred because of the number of people crowded in and around the video control station who were not active participants in the lift. This lead to a higher level of distraction and an increased noise level. Because personnel failed to follow procedures, additional communication problems were encountered when the radiation monitor activated the containment evacuation alarm. The unexpected noise level which accompanied the alarm interfered with the communication process. Testimony of Witness Walsh, pp. 3-7; Hearing Exhibit No. 3.

17. Neither witness Watts nor Walsh recommended that the excess fuel expenses discussed in their testimony be disallowed. Both witnesses considered the Company's fuel costs in light of S.C. Code Ann.,§58-27-865(E)(Cum. Supp. 1991). In the witnesses' review of the statutory considerations, it was their opinion that Duke's equivalent availability of its base load fossil units exceeded 99% for a majority of the months of September through March; its nuclear units achieved a 76% capacity factor for the twelve months ending March 31, 1992 compared to the NERC average of 68% for the year 1990 for pressurized water reactor units; and approximately 48% to 72% of the Company's electric generation was produced by Duke's nuclear units which represents approximately 35% of the Company's installed plant capacity. In light of those positive considerations, the witnesses did not recommend any disallowance of excess fuel costs.

MOTION BY CONSUMER ADVOCATE

18. At the conclusion of the hearing, counsel for the Consumer Advocate moved that the Commission disallow all of the excess fuel replacement costs associated with the Oconee and McGuire outages discussed herein.

CONCLUSIONS OF LAW

1. Pursuant to S.C. Code Ann.,§58-27-865(A)(Cum. Supp. 1991), each electrical utility must submit to the Commission its estimated fuel costs for the next six (6) months. Following an investigation of these estimates and after a public hearing, the Commission directs each electrical utility "to place in effect in its base rate an amount designed to recover, during the succeeding six months, the fuel costs determined by the Commission to be appropriate for that period, adjusted for the over-recovery or under-recovery from the preceding six-month period." Id.

2. S.C. Code Ann., Section 58-27-865(F)(Cum. Supp. 1991) requires the Commission to allow electrical utilities to recover "all their prudently incurred fuel costs... in a manner that tends to assure public confidence and minimize abrupt changes in charges to consumers."

3. S.C. Code Ann., Section 58-27-865(E)(Cum. Supp. 1991) specifies as follows:

> The Commission shall disallow recovery of any fuel costs that it finds without just cause to be the result of failure of the utility to make every reasonable effort to minimize fuel costs or any decision of the utility resulting in unreasonable fuel costs, giving due regard to reliability of service, economical generation mix, generating experience of comparable facilities, and minimization of the total cost of

providing service.

4. As stated by the Supreme Court in Hamm v. South Carolina Public Service Commission, 291 S.C. 178, 352 S.E.2d 476, 478 (1987), Section 58-27-865(E) requires the Commission "to evaluate the conduct of the utility in making the decisions which resulted in the higher fuel costs. If the utility has acted unreasonably, and higher fuel costs are incurred as a result, the utility should not be permitted to past along the higher fuel costs to its customers." "[T]he rule does not require the utility to show that its conduct was free from human error; rather it must show it took reasonable steps to safeguard against error." Id. at 478, citing Virginia Electric and Power Co. v. The Division of Consumer Council, 220 Va. 930, 265 S.E.2d 697 (1980).

5. The Commission recognizes that Section 58-27-865(E) provides it with the authority to consider the electrical utility's reliability of service, its economical generation mix, the generating experience of comparable facilities, and its minimization of the total cost of providing service in determining to disallow the recovery of any fuel costs.

6. The major advantage of producing electricity by nuclear power is the relatively low fuel costs for nuclear fuel generating facilities. The cost of generation of electricity is generally composed of costs such as capital, interest, taxes, insurance, operating and maintenance (O&M) costs, and fuel costs. For fossil fueled plants, the cost of the fuel is a larger portion of the total cost to generate electricity. For nuclear power plants,

while the capital and O&M costs are higher compared to fossil fueled plants, the fuel costs are comparatively low. Thus, if the electricity generated by nuclear plants must be replaced by electricity from a coal or gas fired plant, the Company incurs higher fuel costs. This difference between the fuel costs to generate a quantity of electricity by fossil fuel and the fuel costs to generate the electricity by nuclear fuel is the excess replacement fuel cost.

7. The Commission finds that for the period under review, Duke's overall plant performance was superior. Accordingly, even assuming that negligent actions on the part of Duke caused the Oconee and McGuire outages, the Commission concludes that it would be improper to prohibit the Company from recovering its fuel costs associated with the outages.

8. The Commission concludes that its decision to allow Duke to recover these costs is supported by the substantial evidence of record. The only witnesses who testified at the hearing have stated that the Oconee and McGuire outages were caused by unreasonable actions of the Company, but also recommended that the Commission allow recovery of the associated fuel costs. These witnesses cited the Commission's authority to give "due regard" to the four statutory objectives and explained their consideration of these objectives.

9. In further support of its conclusion not to disallow the fuel costs for the three outages, the Commission has compared Duke's generating experience to other comparable facilities.

Duke's nuclear units achieved a 76% capacity factor for the twelve months ending March 31, 1992 compared to the NERC average of 68% for the year 1990 for pressurized water reactor units. Duke's equivalent availability of its base load fossil units exceeded 99% for a majority of the months of September through March and approximately 48% to 72% of the Company's electric generation was produced by Duke's nuclear units which represent approximately 35% of the Company's installed plant capacity. The Commission has determined that Duke Power produced electric generation in such a manner which reduced the fuel costs for its customers.

10. In regard to the objective of minimizing the total costs of providing service, the Commission recognizes that Duke had projected that its cost for fuel for the last period under review would produce an under-recovery of $4,534,997 at May 1992. In actuality, Duke collected approximately $22,047,183 more than it had projected. The Commission attributes Duke's additional over-collection to the fact that its energy costs were less because it nuclear plants produced a major portion of the Company's electric generation.

11. After considering the directives of §58-27-865(A) and (F) which require the Commission to place in effect a base fuel cost which allows the Company to recover its fuel costs for the next six months adjusted for the over-recovery or under-recovery from the preceding six month period, in a manner which assures public confidence and minimizes abrupt changes in charges, the Commission has determined that the appropriate base fuel factor for June 1992

through November 1992 is 0.950¢/KWH. The Commission finds that a 0.950¢ fuel component will allow Duke to recover its projected fuel costs and, at the same time, prevent abrupt changes in charges to Duke's customers.

12. The Commission has determined that based on the above, the Consumer Advocate's Motion to disallow the excess fuel replacement cost is denied.

IT IS THEREFORE ORDERED THAT:

1. The base fuel factor for the period June 1992 through November 1992 is set at 0.950¢/KWH.

2. Within ten (10) days of the date of this Order, Duke Power Company shall file with the Commission, rate schedules designed to incorporate the findings herein, and an adjustment for fuel costs as demonstrated by Appendix A.

3. That the Company comply with the notice requirements set forth in S.C. Code Ann.,§58-27-865(A) (Cum. Supp. 1991).

4. That the Company continue to file the monthly reports previously required.

5. That the Company account monthly to the Commission for the differences between the recovery of fuel costs through base rates and the actual fuel costs experienced by booking the difference to unbilled revenues with a corresponding deferred debit or credit.

6. That the Company submit monthly reports to the Commission of fuel cost and scheduled and unscheduled outages of generating units with a capacity of 100 MW or greater.

7. That this Order shall remain in full force and effect until further Order of the Commission.

BY ORDER OF THE COMMISSION:

Marjorie Amos-Frazier
Chairman

ATTEST:

Charles W Dalton
Executive Director

(SEAL)

DUKE POWER COMPANY
Adjustment for Fuel Costs

APPLICABILITY

This adjustment is applicable to and is a part of the Utility's South Carolina retail electric rate schedules.

The Public Service Commission has determined that the costs of fuel in an amount to the nearest one-thousandth of a cent, as determined by the following formula, will be included in the base rates to the extent determined reasonable and proper by the Commission for the succeeding six months or shorter period:

$$F = \frac{E}{S} + \frac{G}{S_1}$$

Where:

F= Fuel cost per Kilowatt-hour included in base rate, rounded to the nearest one-thousandth of a cent.

E= Total projected system fuel costs:

(A) Fuel consumed in the Utility's own plants and the Utility's share of fuel consumed in jointly owned or leased plants. The cost of fossil fuel shall include no items other than those listed in Account 151 of the Commission's Uniform System of Accounts for Public Utilities and Licensees. The cost of nuclear fuel shall be that as shown in Account 518 excluding rental payments on leased nuclear fuel and except that, if Account 518 also contains any expense for fossil fuel which has already been included in the cost of fossil fuel, it shall be deducted from this account.

PLUS

(B) Purchased power fuel costs such as those incurred in unit power and Limited Term power purchases where the fuel costs associated with energy purchased are identifiable and are identified in the billing statement.

PLUS

(C) Interchange power fuel costs such as Short Term, Economy, and other where the energy is purchased on economic dispatch basis.

Energy receipts that do not involve money payments such as Diversity energy and payback of storage energy are not defined as purchased or interchange power relative to this fuel calculation.

MINUS

(D) The cost of fuel recovered through intersystem sales including the fuel costs related to economy energy sales and other energy sold on an economic dispatch basis.

Energy deliveries that do not involve billing transactions such as Diversity energy and payback of storage are not defined as sales relative to this fuel calculation.

S = Projected system kilowatt-hour sales excluding any intersystem sales.

G = Cumulative difference between jurisdictional fuel revenues billed and fuel expenses at the end of the month preceding the projected period utilized in E and S.

S_1 = Projected jurisdictional kilowatt-hour sales for the period covered by the fuel costs included in E.

The appropriate revenue related tax factor is to be included in these calculations.

The fuel costs (F) as determined by Public Service Commission of South Carolina Order No. 92-405 for the period June 1992 through November 1992 is 0.950 cents per kilowatt-hour.